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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,195	07/28/2000	HIROMI SAITO	106387	8637
25944	7590	11/26/2003		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320				
			EXAMINER AKKAPEDDI, PRASAD R	
			ART UNIT 2871	PAPER NUMBER

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application N .

09/601,195

Applicant(s)

SAITO ET AL.

Examiner

Prasad R Akkapeddi

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2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 December 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6,9,15.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/19/2003 has been entered.

### ***Response to Arguments***

2. Applicant's arguments filed 08/19/2003 with respect to claims 1-28 have been fully considered but they are not persuasive.

3. Applicant's arguments, see amendment, filed 08/19/2003, with respect to the rejection(s) of claim(s) 29-30 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Oh and Kurematsu.

### ***Drawings***

4. Figures 27-30 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature 'a center position of the opening area formed in one of the substrates and the second substrate is **offset** toward the clear viewing direction with respect to a center position of the opening area formed in another substrate from which light is transmitted' as recited in claim 28, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Even though the applicant in his arguments dated 08/19/2003 claims that the above feature is clearly shown in Fig. 6, the Examiner respectfully disagrees with this. Since for the center positions (21, 31) to be 'offset' they should physically be offset with respect to each other. Being offset with respect to a clear viewing direction is quite subjective, since the clear viewing direction varies with the observation angle. Hence, no physical offset is shown in the figure. In fact, the center positions as shown, clearly are on the same vertical line and the openings in the two substrates overlap each other. To help clarify the Examiner's position, the following example of an 'offset' is provided. There may be other variations:

\_\_\_\_\_.\_\_\_\_\_ (window/opening on substrate 1)

\_\_\_\_\_.\_\_\_\_\_ (window/opening on substrate 2)

In Fig.6, the center positions are clearly on a vertical line. Hence there is no offset shown.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

a. Claim 28 is objected to because of the following informalities: In the instant case the recited feature "of the first opening area and the second opening area, a center position of the opening area formed in one of the substrates and the second substrate is **offset** toward the clear viewing direction with respect to a center position of the opening area formed in another substrate from which light is transmitted" is indefinite due to the unclear language.

Even though the applicant in his arguments dated 08/19/2003 claims that the above feature is shown in the specification at e.g., Page 26, lines 8-11, the Examiner respectfully disagrees with this. Since for the center positions (21, 31) to be 'offset' they should physically be offset with respect to each other. Being offset with respect to a clear viewing direction is quite subjective, since the clear viewing direction varies with the observation angle. No physical offset is shown in the figure. In fact, the center positions as shown, clearly are on the same line and the openings in the two substrates overlap each other. See the illustration above.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-20 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh et al (Oh) (U.S.Patent No. 5,844,644) in view of Kato et al. (Kato) (U.S.Patent No. 5,561,538).

As to claims 1 and 28: Oh discloses a liquid crystal device (fig. 3) with a first substrate (110) with plurality of pixels with pixel electrodes (117), a second substrate (120) and a liquid crystal (Not numbered) sandwiched between the two substrates, a first opening and a second opening in the first and second substrates respectively (Fig. 3). From Fig. 3, one can see that there is a clear viewing direction and an opposite of the clear viewing direction. The viewing directions are as defined by the applicant. Oh also discloses two alignment layers, a first alignment layer (128') and a second alignment layer (128). As is well known, by providing proper rubbing treatment, the alignment layers properly orient the liquid crystal molecules, which will then transmit the incident light, as shown by Oh in Fig. 3.

As to claims 2-20: Oh discloses a black matrix (121) overlapping the pixel electrodes, a first opening and a second opening (Fig. 3), micro lenses (128) in

substrate (120) that oppose each pixel region and substantially coincide with the center position of the opening area, the optical center position of the micro lens being offset toward the clear viewing direction (again, the clear viewing direction is as defined by the applicant), a second light shield (112) formed in a matrix, the micro lenses focusing light, a high refractive index layer (128), a low refractive index layer (125) (since micro lenses are formed in a high refractive index material), a medium refractive index layer (123), a non-lens area (untransmissive portion) (Col 4, line 37-44), an additional layer (Col 4, lines 33-35) for the micro lenses, and the micro lenses being convex (Fig. 4). Oh also discloses that the LCD comprises a plurality of scanning (115) and plurality of data lines and in plane switching.

Though Oh shows the feature in Fig. 3, Oh does not explicitly describe that the light transmitting being controlled by the alignment of liquid crystal molecules.

Kato discloses a liquid crystal display apparatus with a first substrate and a second substrate (2, 3), with pixel electrodes (Fig. 1) (Col. 7, lines 46-65), a liquid crystal between substrates 2 and 3, light blocking areas (opposite of the clear view direction), the light –transmitting areas (clear view direction) where the incident light that entered the light transmitting areas (4b) are controlled by the orienting condition (alignment state) of the liquid crystal molecules (Col. 8, lines 53-60) and Kato also discloses that the light exiting each light transmitting area (clear view direction) of the liquid crystal panel is magnified (Col. 8, lines 60-61).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the configuration disclosed by Kato in order to produce a full-color display of high image quality without degrading image quality and without causing stripe patterns due to parallax (col. 3, lines 1-2).

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oh and Kato and further in view of Suzuki et al (Suzuki) (U.S.Patent No. 6,437,764).

As to claim 21: Oh discloses a liquid crystal display device with all the features, Oh does not explicitly disclose the formation of a storage capacitor.

The storage capacitor is very common for all the liquid crystal devices with switching elements. Suzuki, on the other hand in disclosing a similar liquid crystal device, discloses the use of storage capacitor (Cstg).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the storage capacitor disclosed by Suzuki to the device disclosed by Oh for providing a liquid crystal display with image signal drive circuitry which exhibits an enhanced operational stability (col. 2, lines 1-3) and storing information at the pixel electrode (col. 6, lines 37-38).

11. Claims 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh and Kato and further in view of Hayashi et al (Hayashi) (U.S.Patent No. 6193376).

As to claims 22-27: Oh discloses a liquid crystal device, Oh does not disclose the use of such a device in a projection display device. Using liquid



crystal devices in projection displays is very common for displaying bright, uniform image with good resolution having smaller size and being economical.

Hayashi, on the other hand discloses a liquid crystal projection device that use one or more of liquid crystal panels (65, 66, 67) and the at least one panel (66) (Fig. 22) being inclined with respect to the optic axis.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the liquid crystal device disclosed by Hayashi to the display device disclosed by Oh and Kato for displaying bright, uniform image with good resolution and to provide a low cost and compact device (col. 3, lines 19-21).

12. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh and Kato and further in view of Kurematsu et al. (Kurematsu) (U.S. Patent No. 5,764,318).

As to claims 29 and 30: Neither Oh nor Kato disclose that the microlens refract part of the incident light from the opposite of the clear viewing direction toward the unopened area. Nor do they disclose offset of the optical center position of the microlens.

Kurematsu in disclosing a liquid crystal panel and a projector, discloses in the description of the prior art (Fig. 4), that the microlens (902) refracts light incident light from the opposite of the clear viewing direction (ray labeled b2) (again, the clear viewing direction is the direction as interpreted by the applicant), toward the unopened area (907). Kurematsu discloses the 'offset' of the optical

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center position of the microlens (8) toward the clear view direction with respect to a center position of an opening area formed in another substrate (5) from which light is emitted (Fig. 9B).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the liquid crystal device disclosed by Kurematsu to the display device disclosed by Oh and Kato for improving the optical transmittance of the liquid crystal device by condensing the illuminating light to the areas in the pixel electrodes (col. 2, lines 11-17)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

*PRA*

Prasad R Akkapeddi  
Examiner  
Art Unit 2871

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*T. Chowdhury*  
T. Chowdhury  
Primary Examiner